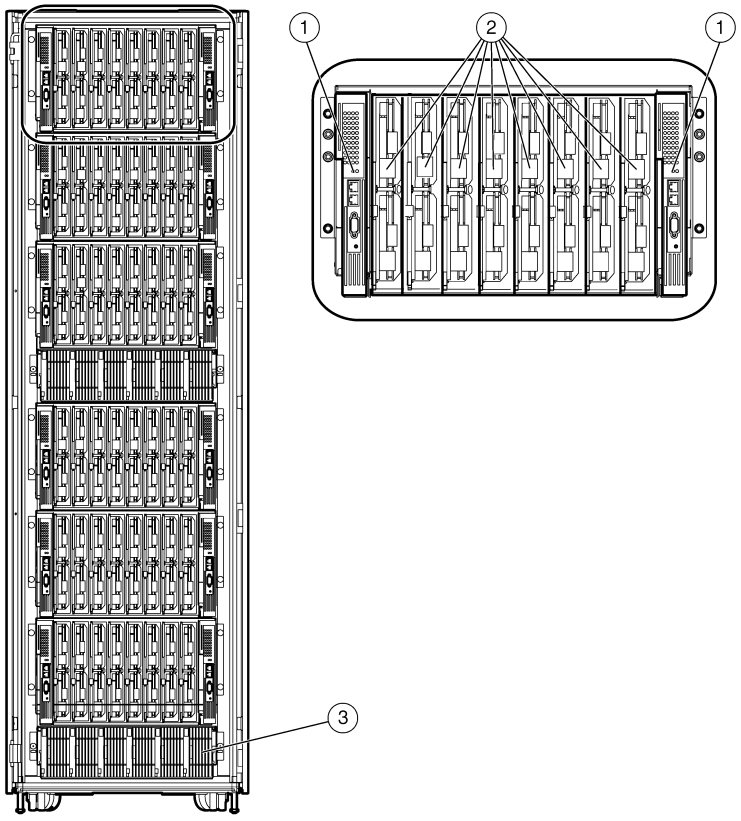
Overview

What's New

- Performance dual processor server blade designed with enterprise availability ProLiant BL20p Server Blade includes:
- Intel® Pentium® III FC-PGA2 1.40 GHz processor (dual capability)
- ServerWorks HE- SuperLite Chipset
- 512-MB or 1024-MB PC133-MHz Registered ECC SDRAM memory, (2 x 1 Interleaved Memory), expandable to 4 GB
- Three NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs standard
- Two NICs are upgradable to 10/100/1000T using the Dual Gigabit Ethernet NC7780 NIC option kit
- One additional 10/100 port dedicated to Integrated Lights-Out (iLO) Management
- Smart Array 5i Controller with optional battery-backed write cache
- Wide Ultra3 SCSI Drive Cage standard supports up to two 1″ Wide Ultra3 or Ultra 320 hot plug hard drives
- Integrated Lights-Out (iLO) Advanced Management (ASIC on motherboard)
- Plugs vertically into 6U enclosure
- Up to 48 BL20p blades fit in 42U rack

- **ProLiant BL p-Class Server Blade Enclosure:**
  - Server blades and interconnects blind mate into server blade enclosures for network connection and power
  - Server blade enclosure is 6U and holds up to 8 ProLiant BL20p server blades and 2 interconnects
  - 2 types of interconnects available: interconnect switches or patch panels
- **ProLiant BL p-Class Power Enclosure:**
  - Use BL p-Class sizing tool to determine power based on your configuration http://activeanswers.compaq.com/aaconfigurator/PowerCalc/BL20p.xls
  - BL p-Class power enclosure provides shared, external, redundant power
  - Power enclosure is 3U and holds up to 6 hot-plug power supplies
  - Choose single-phase or three-phase power
  - BL p-Class power enclosure with power supplies not needed if using facility -48VDC ± 10% in this case purchase DC option kit
- **ProLiant BL p-Class Power Distribution:**
  - Distributes power from the power enclosure to the server blade enclosures
  - Three power distribution choices:
    - BL p-Class scalable bus bar
    - BL p-Class mini bus bar
    - BL p-Class power bus box
- BL p-Class server blade, server blade enclosure, interconnects and power enclosure protected by a limited three year warranty with optional service uplifts available
- Note: Power requirements for a ProLiant BL p-Class system: 200V – 240V AC, 30 amp or facility DC -48V ± 10%.

42U Rack with ProLiant BL p-Class System Installed



1. BL p-Class interconnects (2) in BL p-Class server blade enclosure (interconnect switch shown)
2. BL20p server blades (8) in BL p-Class server blade enclosure
3. BL p-Class power enclosure with hot-plug power supplies (6)

Overview

Configuration Steps

- For a complete configuration of the ProLiant BL20p, do the following:

1. Select BL p-Class server blade:
   Single Intel Pentium III 1.40 GHz processor, 512-MB ECC SDRAM (2 X 256MB) (230040-B21)
   (Note: Additional options include processors, memory, and Gb NIC.)

PLUS

2. Decide how many *BL p-Class* Server Blade Enclosures to purchase (each enclosure can hold up to 8 ProLiant BL20p server blades):
   BL p-Class server blade enclosure with 8 Rapid Deployment Pack licenses (281404-B21)
   or
   BL p-Class server blade enclosure with Rapid Deployment Pack *trial* (243564-B21)

PLUS

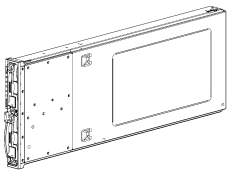
3. Select an Interconnect. Interconnects are sold in pairs. One pair of Interconnects is required with each *BL p-Class* server blade enclosure:
   BL p-Class RJ-45 Patch panel (with 32 RJ-45 connectors) (230766-B21)
   or
   ProLiant BL p-Class C-GbE Interconnect Kit (with 4 RJ-45 10/100/1000 T/TX/T and 4 RJ-45 10/100 T/TX uplink connectors) (249655-B21)
   or
   ProLiant BL p-Class F-GbE Interconnect Kit (with 4 LC 1000 SX and 4 RJ-45 10/100 T/TX uplink connectors) (279720-B21)

PLUS

4. Select BL p-Class power enclosure and power supplies based on configuration. Use p-Class sizing tool to help determine power configuration:
   http://activeanswers.compaq.com/aaconfigurator/PowerCalc/BL20p.xls
   Note: Power enclosures and supplies are not needed if using facility DC (-48V ± 10%).
   Single phase power enclosure with four hot-plug power supplies (239162-001) (Single-phase power enclosure holds a max of four power supplies; no need to order additional power supplies with this option kit)
   or
   Three-phase power enclosure with six hot-plug power supplies (230769-001) (Three-phase power enclosure holds a max of six power supplies no need to order additional power supplies with this option kit)
   (Power enclosures and power supplies can also be purchased separately see options list for part numbers)

PLUS

5. Select power distribution:
   Scalable bus bar - Supports up to 5 server blade enclosures (240560-B21)
   or
   Mini bus bar – Supports up to 3 server blade enclosures (240559-B21)
   or
   Power Bus Box - connects 1 power enclosure to 1 server blade enclosure (240562-B21)



ProLiant BL20p Server Blade

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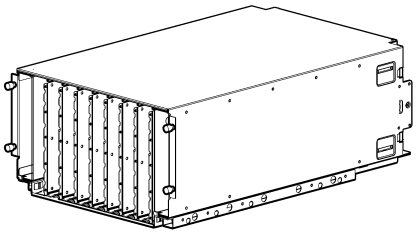

BL p-Class Server Blade Enclosure

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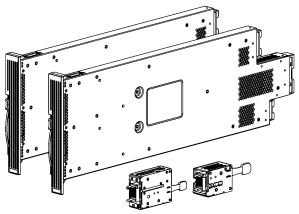
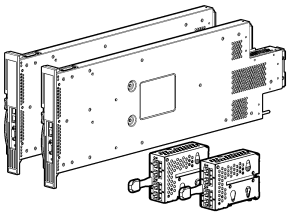


Patch panel

OR



Interconnect Switch (fibre or copper based)

BL p-Class Interconnects

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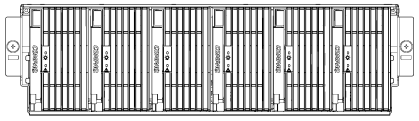

OR Facility DC

BL p-Class power enclosure and power supplies

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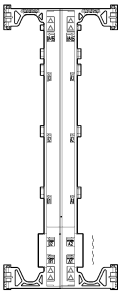

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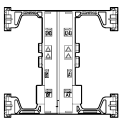

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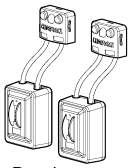

Scalable bus bar | Mini bus bar | Bus boxes

BL p-Class power distribution

Standard Features (Server Blade)

ProLiant BL20p Server Blade

Processor	Intel Pentium III FC-PGA2 processor 1.40 GHz	
Upgradability	Upgradable to dual processing	
Cache Memory	512-KB Level 2 Cache	
Chipset	ServerWorks HE- SuperLite Chipset Note: For more information regarding ServerWorks, please see the following URL: http://www.serverworks.com/products/overview.html.	
Memory	Standard	512MB PC133-MHz Registered ECC SDRAM DIMM Memory (2 X 256 MB) (1 processor model)
	Maximum	4096 MB
	Note: Memory must be installed in pairs.	
Network Controller	Four NICs total: Three Compaq NC3163 Fast Ethernet NIC PCI 10/100 with full WOL (Wake On LAN), one with PXE support One 10/100 iLO NIC dedicated to management Two NICs are upgradable to 10/100/1000T using the Dual Gigabit Ethernet NC7780 NIC option kit	
Manageability	Integrated Lights-Out (iLO) Management Advanced (ASIC on the System Board)	
Internal Storage	Hard Drives	None ship standard
	Maximum Internal Storage	145.6 GB (internal drive cage) (2 x 72.8 GB Wide Ultra3, 1″ drives)
Expansion Slots	No PCI slots all features are integrated	
Product Demo	To view the Product Demo, please see the following URL, then click on ″PRODUCT DEMO″: http://www5.compaq.com/products/servers/proliant-bl/p-class/index.html	

ProLiant BL p-Class Server Blade Enclosure and Interconnects

ProLiant BL p-Class Server Blade Enclosure	6U (10.5-inch), 19-inch wide Holds up to 8 ProLiant BL20p servers blades 10 bays per server blade enclosure 8 bays for server blades 2 outside bays for interconnect modules (RJ-45 patch panels or GbE interconnect switches) Server blades blind mate into the server blade enclosure backplane for power and data connections Up to 6 BL p-Class 6U server blade enclosures fit in a 42U rack Server blade management module attached to the back of each BL p-Class 6U server blade enclosure to report events all servers and provide asset and inventory information
ProLiant BL p-Class Power Requirements	Redundant 200V – 240V AC, 30 amp single-phase for Redundant 208V 30amp 3-phase 4 wire Redundant -48VDC ± 10%

Standard Features (Server Blade Enclosure & Interconnects)

ProLiant BL p-Class Interconnect Switch Option

(Two switches per kit)

(Every BL p-Class server blade enclosure requires two Interconnect switches OR two RJ-45 patch panels)

Provides up to a 32 to 1 server networking cable reduction per server enclosure. Each interconnect switch (two per enclosure) reduces sixteen 10/100 Base-T/Base-TX server network ports to four uplinks ports (eight uplinks total). Only one to all eight uplinks may be used per enclosure.

The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE interconnect switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and four (4) RJ-45 10/100 T/TX uplink ports per server enclosure.

The ProLiant BL p-Class C-GbE Interconnect Kit includes two GbE interconnect switches and two QuadT Interconnect Modules that provide four (4) RJ-45 10/100/1000 T/TX/T and four (4) RJ-45 10/100 T/TX uplink ports per server enclosure.

Also included (per Interconnect Switch):

- Two (2) RJ-45 10/100 T/TX front panel ports for management or additional uplinks
- One (1) RS-232 DB-9 front panel out-of-band management port
- Redundant 10/100 cross links ports connecting the two Interconnect Switches
- Redundant power and cooling inputs
- Hot-plug and hot- remove with configuration retention capability
- Power ON, management, and per port status and speed LED indicators
- Reset/power momentary push-button switch
- Compaq ProLiant BL Interconnect Switch Management Utilities and User Documentation CD
- Fully pre-configured for rapid deployment and immediate operation

ProLiant BL Interconnect Switch Management System and Utilities:

Full featured web-based interface, menu-driven console interface, Telnet, SNMP-based scripting utility and example scripts, SNMP and RMON MIBs, BootP and DHCP client, port mirroring, QoS packet prioritization, IGMP multicasting, and TFTP server utilities for management of interconnect switch

ProLiant BL p-Class RJ-45 patch panel

(Two patch panels per kit)

(Every BL p-Class server blade enclosure requires two Interconnect switches OR two RJ-45 patch panels)

6U (10.5-inch), Plugs into BL p-Class 6U server blade enclosures

Used to pass NIC signals from all server blades in server blade enclosure out as RJ-45 connections

Supports Gigabit Ethernet network controllers

16 RJ-45 connectors on the back of each BL p-Class 6U RJ-45 patch panel (32 RJ-45 connections per server blade enclosure)

Required Network Cabling

10Base-T	Categories 3, 4 or 5 UTP (100 meters)
	EIA/TIA-568 100-ohm STP (100 meters)
100Base-TX	Category 5 UTP (100 meters)
	EIA/TIA-568 100-ohm STP (100 meters)
1000Base-T	Category 5 UTP (100 meters)
	EIA/TIA-568 100-ohm STP (100 meters)
1000Base-SX	50/125 µm Multimode Fiber, 400 MHz/Km (500 meters)
	50/125 µm Multimode Fiber, 500 MHz/Km (550 meters)
	62.5/125 µm Multimode Fiber, 160 MHz/Km (220 meters)
	62.5/125 µm Multimode Fiber, 200 MHz/Km (275 meters)

Note: For cabling information, refer to the Web site at: http://www.compaq.com/products/servers/

Standard Features (Power System and Rack Information)

ProLiant BL p-Class Power System and Rack Information

Note: To determine power configuration please refer to the ProLiant BL p-Class Overview and Planning Whitepaper and sizing tool, please see the following URL:
http://www.compaq.com/products/servers/proliant-bl/p-class/index.html

ProLiant BL p-Class Power Enclosure

3U (5.25-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), Dual input single phase and three phase models available

BL p-Class power enclosure provides external, shared hot-plug power. Each three-phase power enclosure houses up to six hot-plug power supplies each single-phase power enclosures hold up to four hot-plug power supplies to power the BL p-Class server blades and interconnects

Please use the sizing utility to determine the power needed for each configuration.

http://activeanswers.compaq.com/aaconfigurator/PowerCalc/BL20p.xls

Power enclosures and power supplies are not needed if using facility DC (-48V DC ± 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.

BL p-Class Power Distribution

In the ProLiant BL p-Class infrastructure, redundant -48 VDC power (from the power enclosures or facility DC power) is distributed from the power enclosures to the server blade enclosures through the Compaq bus bar system. Hinges attach the ProLiant BL bus bars to the rails in a rack. The bus bars swing open from the center to enable easy rear access to the server blades and network cables. Power is distributed redundantly through independent A- and B-sided bus bars.

Three different power distribution solutions are available depending on the maximum number of server blade enclosures planned for the rack:

- Compaq ProLiant BL p-Class scalable bus bar
- Compaq ProLiant BL p-Class mini bus bar

Note: To support a full 42U rack of BL20p server blades (6 server blade enclosures), two mini bus bars are needed.

- Compaq ProLiant BL p-Class power bus box

	Power Enclosures Supported	Server Blade Enclosures Supported	Max. Rack Space Occupied
Scalable Bus Bar	1 or 2	≤ 5	36U
Mini Bus Bar	1	≤ 3	21U
Power Bus Box	1	1	9U

Required Power Source

Two 30amp redundant power feeds per power enclosure
Connectors
–NEMA receptacles
1-phase L6-30, 250v, 30A 3-wire
3-phase L15-30, 250V, 30A, 4-wire
Optimized for power cabling from bottom and network cabling from top
For cabling information, refer to the Web site at
http://www.compaq.com/products/servers/

Standard Features

ProLiant Essentials Foundation Pack Software	*Optional* ProLiant Essentials Value Packs	Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: • Rapid Deployment Pack – an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands. • Workload Management Pack – provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server. • Integrated Lights-Out Advanced Pack - The BL20p includes the advance version of the Integrated Lights-Out which includes graphical console and virtual media.
	Insight Manager™ 7	Insight Manager 7 helps maximize system uptime and performance and reduces the cost of maintaining the IT infrastructure by providing proactive notification of problems before those problems result in costly downtime and reduced productivity. Insight Manager 7 is easy to set up and provides rapid access to detailed fault and performance information gathered by the Management Agents. One-click-access to the Remote Insight Lights Out Edition board allows systems administrators to take full graphical control of ProLiant servers in remote locations or lights-out data centers. Finally, Insight Manager 7 in concert with the Version Control Agents and Version Control Repository Manager enables systems administrators to version manage and update system software across groups of Compaq ProLiant servers.
	Management Agents	The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to Insight Manager 7 and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management website at http://www.hp.com/servers/manage
	ActiveUpdate	ActiveUpdate is a web-based application that keep IT managers directly connected to HP for proactive notification and delivery of the latest software updates.
	Compaq ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options.
	Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips.
	Compaq Health Driver	Health Drivers interface with the Integrated Lights-Out ASIC to provide system management support, including monitoring of server components, event logging and support for the Compaq Insight Management Agents.
	iLO Management Interface Driver	The iLO Management Interface Driver provides access to the iLO management processor for Insight Management Agents. This interface is used to provide SNMP alert forwarding and management agent integration. Note: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Standard Features

OS Support

Microsoft® Windows 2000 Server and Advanced Server

LINUX® (Red Hat® and SuSE®)

Microsoft .NET™ Server

Note: For a more complete and up-to-date listing of supported OS's and versions, please visit our OS Support Matrix at: ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf.

Note: For an up-to-date listing of the latest drivers available for the Compaq ProLiant BL p-Class, please see: http://www.compaq.com/support/files/server/us/index.html.

Intelligent Manageability

Integrated Lights-Out Advanced (iLO)

- Virtual Text and Graphical Remote Console *
- Virtual Floppy *
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Automatic Server Recovery-2 (ASR-2)
Insight Manager 7
Redundant ROM
Remote Flash ROM
ROM Based Setup Utility (RBSU)
Advanced Configuration and Power Interface Specification Ready (ACPI)
Server Health Logs
Compaq Redundant Power Supply Utility
Pre-Failure Warranty (covers processors, as well as hard drives and memory)
Compaq Interconnect Switch Management System and Utilities (interconnect switch option)
Integrated Management Log (IML)
Off-Line Backup Processor capability
Dynamic sector repairing and drive parameter tracking (with Smart Array controllers)
Redundant/adaptive load balancing NIC Support

* Advanced features such as Graphical Remote Console and Virtual Floppy are included with the BL p-Class server.

Availability

Power redundancy: Redundant AC feeds into power enclosures, redundant DC feeds from power enclosure to server blade enclosures, 1 + 1 redundant power supplies

Two hot-plug SCSI hard drive bays and integrated RAID (Smart Array 5i) on every server blade (Battery-backed write cache is optional.)

Redundant ROM on each server blade

ECC Memory

Interconnects Switch Availability

- Hot-plug and hot- remove with configuration retention capability
- Two network connections per server blade bay (four NICs total) routed to two redundant interconnect switches
- Redundant inter-switch communication with two sets of redundant uplink ports per each interconnect switch
- IEEE 802.1D Spanning tree protocol support for loop-free path redundancy
- Static IEEE 802.3ad (EtherChannel compatible) trunking with automatic port load balancing

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Standard Features

Security

Power-on password
Administrator's password
Integrated Lights-Out has 12 customizable user accounts and SSL encryption
Integrated Lights-Out can be disabled via a Global Setting
Interconnect Switch multilevel user names and passwords and management interface time out period setting
Up to 64 Port-based IEEE 802.1Q tagged VLANs per interconnect switch

Minimum Rack Requirements

Mounts in Compaq, and Telco racks and Third Party racks that meet the following criteria:

- Compatible with 19-inch Standard EIA rail sets
- EIA rail-to-rail depth is 29 – 30″
- Cabinet depth must be at least 36-inch deep overall (Additional min. 3.5-inch clearance from rear RETMA rail to rear door, inclusive in the 36-inch overall depth)
- Ample room for top and bottom cable egress (approximately 8 square inches for full rack configuration with patch panel)
- Must be capable of supporting 1600 lb (for full rack configuration)
- Perforated front and rear doors to accommodate front-to-back cooling
- Must have 65% open perforation on server blade enclosure doors to support airflow requirements
- Optimized for use with the Compaq 10000 Series racks

Note: If using Compaq 7000 Series rack, Compaq Rack Extension Kit and High Air Flow Rack Door options are required.

Rack Airflow Requirements

- Rack 9000 and 10000 series Cabinets

  The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The Compaq 9000 Series and 10000 Series Racks provides enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

- Rack 7000 series Cabinets

  When installing a server with processors running at speeds of 550 MHz or greater in Compaq Rack 7000 series racks with glass doors (165753-001 (42U), and 163747-001 (22U)), the new processor technology requires the installation of High Airflow Rack Door Inserts (327281-B21 (42U), 327281-B22 (42U 6 pack), or 157847-B21 (22U)) to promote enhanced airflow for maximum cooling.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Note: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://www5.compaq.com/products/servers/proliantdl380/index.html.

Service and Support

HP Services provides a three-year, limited warranty, including Pre-Failure Warranty (coverage of hard drives, memory and processors) fully supported by a worldwide network of resellers and service providers. HP technical assistance is available 7x24, toll free in the United States and Canada. Telephone support services may be covered under warranty or available for an additional fee.

Note: Sever Blade Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Note: Server Blade Enclosure and Interconnects Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

A full range of *CarePaq*™ packaged hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

Note: For more information, customer/resellers can contact http://www.compaq.com/services.

Please see the following URL regarding Warranty Information For Your Proliant Products: http://www.compaq.com/support/warranty_upgrades/web_statements/176738.html

For additional information regarding Worldwide Limited Warranty and Technical Support, please see the following URL: ftp://ftp.compaq.com/pub/supportinformation/ejourney/176738.pdf.

Note: Certain restrictions and exclusions apply. Consult the Customer Support Center at 1-800-345-1518 for details.

Models

ProLiant BL20p P1400-512KB, 512MB (1P) *230040-B21*	**Processor(s)**	(1) Intel Pentium III 1.40 GHz standard (up to 2 supported)
	Cache Memory	512-KB Level 2 writeback per processor
	Memory	512 MB (Standard) (2 X 256MB) to 4096 MB PC133-MHz Registered ECC SDRAM DIMM Memory
	Network Controller	Three Compaq NC3163 Fast Ethernet NIC PCI 10/100 with full WOL (Wake On LAN); one NIC has PXE support One additional 10/100 port dedicated to iLO Management
	Storage Controller	Smart Array 5i Controller (integrated on system board)
	Hard Drives	None ship standard
	Internal Storage	Up to 145.6-GB maximum (with optional hard drives)
	Optical Drive	None
	Form Factor	Plugs vertically into Compaq ProLiant BL p-Class Server Blade Enclosure

Options

ProLiant BL20p Unique Options	Dual NC7780 Gigabit Upgrade Module for ProLiant BL20p Note: The Dual NC7780 Gigabit Upgrade Module replaces two of the standard NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs to two 10/10/1000T NC7780 NICs. Note: The GbE Interconnect Switch options support server NIC speeds to 100 Mbps. It is recommended that the patch panel be used with the Dual NC7780 Gigabit Upgrade Module if server NIC speeds to 1000 Mbps are required.	230255-B21
	ProLiant BL p-Class Server Blade Enclosure (ProLiant Essentials Rapid Deployment Pack Trial)	243564-B21
	ProLiant BL p-Class Server Blade Enclosure (8 ProLiant Essentials Rapid Deployment Pack Licenses)	281404-B21
	ProLiant BL p-Class RJ-45 Patch panel (pair) Note: Only one interconnect kit required per server blade enclosure.	230766-B21
	ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules) Note: Only one interconnect kit required per server blade enclosure. Note: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	249655-B21
	ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules) Note: Only one interconnect kit required per server blade enclosure. Note: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	279720-B21
	Single Phase Redundant Power Enclosure with 4 power supplies (Single Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-001
	3 Phase Redundant Power Enclosure with 6 power supplies (3 Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	230769-001
	Single Phase Power Enclosure (empty) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-001
	3 Phase Power Enclosure (empty) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-001
	Single Power Supply	239161-B21
	Facility DC Power Connection	240563-B21
	ProLiant p-Class Scalable Bus Bar	240560-B21
	ProLiant p-Class Mini Bus Bar	240559-B21
	ProLiant p-Class Bus Power Box	240562-B21

Options

ProLiant Essentials Value Pack Software	Rapid Deployment Pack, 10 User, V1.x Note: This license allows 10 servers to be managed and deployed via the Deployment Server. Note: Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21.	269817-B21
	Rapid Deployment Pack, 1 User, V1.x Note: This license allows 1 server to be managed and deployed via the Deployment Server. Note: Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21.	267196-B21
	ProLiant Essentials Workload Management Pack (Featuring Resource Partitioning Manager version 2.0)	303284-B21
	Note: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials Note: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to URL http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information. Note: These Web sites are available in English only.	
Processor	Pentium III P1400-512KB Processor Option Kit	234277-B21
Memory (SDRAM DIMMs)	2048 MB PC133MHz Registered ECC SDRAM Memory Kit (2x1024 MB)	201695-B21
	1024 MB PC133MHz Registered ECC SDRAM Memory Kit (2x512 MB)	201694-B21
	512 MB PC133MHz Registered ECC SDRAM Memory Kit (2x256 MB)	201693-B21
	256 MB PC133MHz Registered ECC SDRAM Memory Kit (2x128 MB)	201692-B21
Hard Drives	***Ultra 320 SCSI – Universal Hot Plug***	
	36.4GB 10,000 rpm, U320 Universal Hard Drive, 1″	286713-B22
	72.8GB 10,000 rpm, U320 Universal Hard Drive, 1″	286714-B22
	18.2GB 15,000 rpm, U320 Universal Hard Drive, 1″	286775-B22
	36.4GB 15,000 rpm, U320 Universal Hard Drive, 1″	286776-B22
	72.8GB 15,000 rpm, U320 Universal Hard Drive, 1″	286778-B22
	Note: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.	
	Wide Ultra3 SCSI – Universal Hot Plug	
	72.8-GB Wide Ultra3 SCSI 10,000 rpm Drive (1″)	232432-B22
	36.4-GB Wide Ultra3 SCSI 10,000 rpm Drive (1″)	176496-B22
	18.2-GB Wide Ultra3 SCSI 10,000 rpm Drive (1″)	142673-B22
	36.4-GB Wide Ultra3 SCSI 15,000 rpm Drive (1″)	232916-B22
	18.2-GB Wide Ultra3 SCSI 15,000 rpm Drive (1″)	188122-B22
Storage Controllers	Battery Backed Write Cache Enabler Option Kit	255514-B21
	Note: Please see the following Controller QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information: http://www5.compaq.com/products/quickspecs/11063_div/11063_div.HTML (Smart Array 5i Plus)	

Options

Communications	Dual NC7780 Gigabit Upgrade Module for ProLiant BL20p	230255-B21
	Note: The Dual NC7780 Gigabit Upgrade Module replaces two of the standard NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs to two 10/10/1000T NC7780 NICs.	
	Note: The GbE Interconnect Switch options support server NIC speeds to 100 Mbps. It is recommended that the patch panel be used with the Dual NC7780 Gigabit Upgrade Module if server NIC speeds to 1000 Mbps are required.	
BL p-Class Server Blade Enclosures	ProLiant BL p-Class Server Blade Enclosure (ProLiant Essentials Rapid Deployment Pack Trial)	243564-B21
	ProLiant BL p-Class Server Blade Enclosure (8 ProLiant Essentials Rapid Deployment Pack Licenses)	281404-B21
BL p-Class Interconnects	ProLiant BL p-Class RJ-45 Patch panel (pair) Note: Only one interconnect kit required per server blade enclosure.	230766-B21
	ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules) Note: Only one interconnect kit required per server blade enclosure. Note: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	249655-B21
	ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules) Note: Only one interconnect kit required per server blade enclosure. Note: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	279720-B21
BL p-Class Power options	Note: Use p-Class sizing tool to help determine power configuration: http://activeanswers.compaq.com/aaconfigurator/PowerCalc/BL20p.xls	
	Single Phase Redundant Power Enclosure with 4 power supplies (Single Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-001
	3 Phase Redundant Power Enclosure with 6 power supplies (3 Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	230769-001
	Single Phase Power Enclosure (empty) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-001
	3 Phase Power Enclosure (empty) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-001
	Single Power Supply	239161-B21
	Facility DC Power Connection	240563-B21
Power Distribution	ProLiant p-Class Scalable Bus Bar	240560-B21
	ProLiant p-Class Mini Bus Bar	240559-B21
	ProLiant p-Class Bus Power Box	240562-B21
Diagnostic Options	ProLiant p-Class Diagnostic Station Note: The Diagnostic Station allows access to the ProLiant BL20p server blade and the BL p-Class interconnect switch outside of the server enclosure. The option provides power and a data interface so that "offline" upgrade and diagnostic functions may be performed.	230743-B21

Options

Compaq Rack 10000 Series (Graphite Metallic)	Compaq Rack 10842 (42U) – Pallet	257415-B21
	Compaq Rack 10842 (42U) – Shock Pallet	257415-B22
	Compaq Rack 10647 (47U) – Pallet	245160-B21
	Compaq Rack 10647 (47U) – Crated	245160-B23
	Compaq Rack 10642 (42U) – Pallet	245161-B21
	Compaq Rack 10642 (42U) – Shock Pallet	245161-B22
	Compaq Rack 10642 (42U) – Crated	245161-B23
	Compaq Rack 10636 (36U) – Pallet	245162-B21
	Compaq Rack 10636 (36U) – Shock Pallet	245162-B22
	Compaq Rack 10636 (36U) – Crate	245162-B23
	Compaq Rack 10622 (22U) – Pallet	245163-B21
	Compaq Rack 10622 (22U) – Shock Pallet	245163-B22
	Compaq Rack 10622 (22U) – Crated	245163-B23
	Note: -B21 (pallet) used to ship empty racks shipped on a truck -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels) -B23 (crated) used for air shipments of empty racks Not all Compaq equipment is qualified to be shipped in the Rack 10000 series.	
	Note: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://www5.compaq.com/products/quickspecs/10995_na/10995_na.HTML	
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	
Compaq Rack 9000 Series (Opal)	Compaq Rack 9142 (42U) – Pallet	120663-B21
	Compaq Rack 9142 (42U) – Shock Pallet	120663-B22
	Compaq Rack 9142 (42U) – Crated	120663-B23
	Compaq Rack 9136 (36U) – Pallet	120664-B21
	Compaq Rack 9136 (36U) – Shock Pallet	120664-B22
	Compaq Rack 9136 (36U) – Crated	120664-B23
	Compaq Rack 9122 (22U) – Pallet	120665-B21
	Compaq Rack 9122 (22U) – Shock Pallet	120665-B22
	Compaq Rack 9122 (22U) – Crated	120665-B23
	Compaq Rack 9842 (800mm wide, 42U) - Pallet	222192-B21
	Note: -B21 (pallet) used to ship empty racks shipped on a truck -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels) -B23 (crated) used for air shipments of empty racks	
	Note: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://www5.compaq.com/products/quickspecs/10366_na/10366_na.HTML	
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	

Options

Rack Options for Compaq Rack 10000 Series	Rack Blanking Panels – Graphite (Multi) Note: Contains one each of 1U, 2U, 3U and 4U panel.	253214-B26
	Rack Blanking Panels – Graphite (1U) Note: The Rack Blanking Panels (PN 253214-B21) contains 10 each of (1U).	253214-B21
	Rack Blanking Panels – Graphite (2U) Note: The Rack Blanking Panels (PN 253214-B22) contains 10 each of (2U).	253214-B22
	Rack Blanking Panels – Graphite (3U) Note: The Rack Blanking Panels (PN 253214-B23) contains 10 each of (3U).	253214-B23
	Rack Blanking Panels – Graphite (4U) Note: The Rack Blanking Panels (PN 253214-B24) contains 10 each of (4U).	253214-B24
	Rack Blanking Panels – Graphite (5U) Note: The Rack Blanking Panels (PN 253214-B25) contains 10 each of (5U).	253214-B25
	800mm Stabilizer Option Kit (Graphite) Note: The 800mm Stabilizer Kit (PN 255488-B21) supports the Rack 9842 only.	255488-B21
	600mm Stabilizer Kit – Graphite	246107-B21
	Baying Kit for Rack 10000 series (Carbon)	248929-B21
	42U Side Panel – Graphite Metallic	246099-B21
	110V Fan Kit (Graphite) Note: Roof Mount Includes power cord with IEC320-C13 to NEMA 5-15P.	257413-B21
	220V Fan Kit (Graphite) Note: Roof Mount Includes power cord with IEC320-C13 to NEMA 6-15P.	257414-B21
	36U Side Panel – Graphite Metallic	246102-B21
	47U Side Panel – Graphite Metallic	255486-B21
	9000/10000 Series Offset Baying Kit (42U) Note: This kit can be used to connect 9000 and 10000 series racks of the same height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	248931-B21
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	
Rack Options for Compaq Rack 9000 Series	Baying/Coupling Kit	120669-B21
	42U Side Panel Note: The 42U Side Panel (PN 120670-B21) supports the Compaq Rack 9142 and Compaq Rack 9842.	120670-B21
	36U Side Panel Note: The 36U Side Panel (PN 120671-B21) supports the Compaq Rack 9136.	120671-B21
	600mm Stabilizer Option Kit	120673-B21
	800mm Stabilizer Option Kit (Opal) Note: The 800mm Stabilizer Kit (PN 234493-B21) supports the Rack 9842 only	234493-B21
	Grounding Rack Option Kit	120682-B21
	Stabilizer Option Kit	120673-B21
	Rack Blanking Panel (Multi) Note: Kit includes four panels in 1U, 2U, 4U, and 8U.	169940-B21
	9142 Extension Kit Note: The 9142 Extension Kit (PN 120679-B21) supports the Compaq Rack 9142 only.	120679-B21

Options

Rack Options for Compaq Rack 9000 Series *(continued)*	Rack Blanking Panels (1U) Note: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (1U).	189453-B21
	Rack Blanking Panels (2U) Note: The Rack Blanking Panels (PN 189453-B22) contains 10 each of (2U).	189453-B22
	Rack Blanking Panels (3U) Note: The Rack Blanking Panels (PN 189453-B23) contains 10 each of (3U).	189453-B23
	Rack Blanking Panels (4U) Note: The Rack Blanking Panels (PN 189453-B24) contains 10 each of (4U).	189453-B24
	Rack Blanking Panels (5U) Note: The Rack Blanking Panels (PN 189453-B25) contains 10 each of (5U)	189453-B25
	9136 Extension Kit	218216-B21
	9142 Short Rear Door Note: The 9142 Short Rear Door (PN 218217-B21) supports the Compaq Rack 9142 only.	218217-B21
	Split Rear Door (Opal) Note: The Split Rear Door (PN 254045-B21) supports the 600 mm wide, 42U 9000 series rack.	254045-B21
	9136 Short Rear Door	218218-B21
	9142 Split Rear Door	254045-B21
	9000/10000 Series Offset Baying Kit Note: This kit can be used to connect 9000 and 10000 series racks in 42U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	248931-B21
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	
Rack Options for Compaq Rack 7000 Series and Telco racks	High Air Flow Rack Door Insert for 7122	157847-B21
	High Air Flow Rack Door Insert for 7142 (single)	327281-B21
	High Air Flow Rack Door Insert for 7142 (6-pack)	327281-B22
	Compaq Networking Cable Management Kit	292407-B21
	Compaq Networking Recessed Rail Management Kit	292406-B21
	Compaq Rack Extension Kit for 7142	154392-B21
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	
Rack Options for Compaq Rack 10000, 9000 and 7000 Series	Monitor Utility Shelf	303606-B21
	Ballast Option Kit	120672-B21
	100kg Sliding Shelf	234672-B21
	Rack Rail Adapter Kit (25″ depth)	120675-B21
	Monitor/Utility Shelf - Graphite	253449-B21
	Depth Adjustable Fixed Rail	332558-B21
	Cable Management D-Rings Kit	168233-B21
	Console Management Controller (CMC) Option Kit	203039-B21
	Console Management Controller (CMC) Sensors Option Kit	203039-B22
	Console Management Controller (CMC) Locking Option Kit	203039-B23
	Console Management Controller (CMC) Smoke Sensor Option Kit	203039-B24
	Note: For additional information regarding Rack Cabinets, please see the following URL: http://www.compaq.com/racks	
Rack Options for Telco Racks	Bus Bar Telco Rail Option Kit	245249-B21
	Enclosure Telco Rail Option Kit	266076-B21

Service and Support Offerings
(CarePaq Services)

Hardware Services 4-Hour On-site Service	
3 yrs, 9x5, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution. (6-3 part number for US)	274369-002
3 yrs, 24x7, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution. (6-3 part number for US)	274370-002
3 yrs, 9x5, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution. Electronic CarePaq service. (6-3 part number for US)	302329-001
3 yrs, 24x7, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution. Electronic CarePaq service. (6-3 part number for US)	302330-001
Installation & Start-up Services	
Install ProLiant BL p-Class server blade enclosure including up to 8 ProLiant BL p-Class server blades and interconnects, power enclosure with power supplies and power distribution. (6-3 part number for US)	274371-002
Install ProLiant BL p-Class server blade enclosure including up to 8 ProLiant BL p-Class server blades and interconnects, power enclosure with power supplies and power distribution. Electronic CarePaq service. (6-3 part number for US)	302331-001
Provides for the Installation and Start-up of Rapid Deployment Pack on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days. (6-3 part number for US)	274545-002
Note: For more information, customer/resellers can contact http://www.compaq.com/services.	

ProLiant BL20p Server Blade (1P Model)

STANDARD MEMORY

512-MB PC133 MHz Registered ECC SDRAM DIMM installed (2 x 256-MB SDRAM DIMM)

STANDARD MEMORY PLUS OPTIONAL MEMORY

Up to 2560-MB of SDRAM DIMM memory is available with the installation of optional SDRAM DIMM memory expansion kits.

STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Up to 4096-MB of SDRAM DIMM memory is available with the removal of standard memory and the installation of optional SDRAM DIMM memory expansion kits.

Memory		Slot			
		1	2	3	4
Standard	**512 MB**	256 MB	256 MB	Empty	Empty
Optional	**2560 MB**	256 MB	256 MB	1024 MB	1024 MB
Maximum	**4096 MB**	1024 MB	1024 MB	1024 MB	1024 MB

Following are memory options available from Compaq:

- 2048-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 1024 MB) 201695-B21
- 1024-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 512 MB) 201694-B21
- 512-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 256 MB) 201693-B21
- 256-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 128 MB) 201692-B21

Compaq ProLiant BL p-Class Server Blade Enclosure	**Dimensions**	Height	10.5 in/26.67 cm	
		Width	17.60 in/44.70 cm	
		Depth	28.86 in/73.30 cm	
	Input Specifications	Rated input voltage	-43 VDC to -53 VDC	Nominal -48 VDC
		Rated input current	62.5 A at -48 VDC	
		Rated input Power	3000 W	
	Individual server blade bay ratings	Rated input voltage	-43 VDC to -53 VDC	Nominal -48 VDC
		Rated input current	6.25 A at -48 VDC	
		Rated input Power	300 W	
	Temperature range	Operating	50° to 95° F/10° to 35° C	
		Non-Operating	-22° to 140° F/-30° to 60° C	
	Relative humidity (non-condensing)	Operating	20% to 80%	
		Non-Operating	5% to 95%	
	Wet bulb temperature	Operating	82.4° F/28° C	
		Non-Operating	101.7° F/38.7° C	

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL20p Server Blade	**Dimensions**	Height	1.69 in/4.29 cm
		Width	10.29 in/26.14 cm
		Depth	28.00 in/71.12 cm
	Weight (maximum)	18.0 lb/8.17 kg	
	Temperature range	Operating	50° to 95° F/10° to 35° C
		Non-operating	
		Shipping	-40° to 140° F/-40° to 60° C
		Storage	-4° to 140° F/-20° to 60° C
	Relative humidity (non-condensing)	Operating	10% to 90%
		Non-operating	
		Shipping	10% to 90%
		Storage	10% to 95%
	Maximum wet bulb temperature	82° F/28° C	

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for RJ-45 Patch Panel

Dimensions	Height	10.405 in/26.43 cm
	Width	1.535 in/3.899 cm
	Depth	27.697 in/70.35 cm
Capability	IEEE 802.2, 802.3, 802.3u	
Network transfer rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (full-duplex)	1000 Mbps
Connector	RJ-45	
Cable support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft/100 m
	100 Base-TX	Category 5 UTP (2 pair); up to 328 ft/100 m
	1000 Base-TX	Category 5E (4 pair); up to 328 ft/100 m
Power requirements	200 mA at +5V DC; 500 mA at -48V	
Temperature range	Operating	50° to 95° F/10° to 35° C
	Non-operating	-22° to 140° F/-30° to 60° C
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet bulb temperature	Operating	82.4° F/28° C
	Non-operating	101.7° F/38.7° C

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for Interconnect GbE Switch

Dimensions	Height	10.405 in/26.43 cm
	Width	1.535 in/3.899 cm
	Depth	27.697 in/70.35 cm
Weight	11.5 lb/5.2 kg per interconnect switch	
Performance	3.2 Gbps Switching bandwidth per server enclosure	
	4.4 Gbps uplink bandwidth per server enclosure	
	9.6 Million pps aggregate throughput per server enclosure (64-byte packets)	
	Full-wire speed for all connections	
	Auto-negotiation and auto-sensing with full-duplex support	
Forwarding mode	Store and forward	
MAC Addresses	8,191 per interconnect switch; MAC address based filtering and MAC address packet priority configuring	
Forwarding table age time	Maximum age: 10 to 9999 seconds; default: 3000 seconds	
Memory	32MB Main, 6MB flash and 16MB packet buffer per interconnect switch	
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3z, 802.1D, 802.1p, 802.3ac, 802.3ad (Static), 802.1Q, and 802.3x	
	SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9	
	MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface MIB (RFC 2233), 801.1Q MIB (RFC 2684), RMON1 MIB (RFC 1757) groups 1, 2, 3, and 9, and Ethernet MIB (RFC1643)	
Network transfer rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half-duplex)	1000 Mbps
	1000 Base-TX (full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps
Connector	RJ-45, DB-9 (C-GbE Interconnect Kit) LC fiber, RJ-45, DB-9 (F-GbE Interconnect Kit)	
EMI	FCC Class A	
	ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
Safety	UL/CUL Listed Accessory	
Power requirements	48V: 1050 mA, 50 W maximum (per interconnect switch)	
Temperature range	Operating	50° to 95° F/10° to 35° C
	Non-operating	-22° to 140° F/-30° to 60° C
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet bulb temperature	Operating	82.4° F/28° C
	Non-operating	101.7° F/38.7° C

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for Power Enclosures

		Single-Phase Model	Three-Phase Model
Dimensions	Height	5.25 in/13.34 cm	5.25 in/13.34 cm
	Width	17.60 in/44.7 cm	17.60 in/44.7 cm
	Depth	27.15 in/68.96 cm	27.15 in/68.96 cm
Weights	No hot-plug power supplies	47.5 lb/21.55 kg	47.5 lb/21.55 kg
	All hot-plug power supplies	99.5 lb/45.13 kg	125.5 lb/56.93 kg
Input requirements	Rated input voltage	200 VAC to 240 VAC	200 VAC to 240 VAC line to line
	Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
	Rated input current per side	24A	24A per phase
	Rated input power per side	5760 W	9976 W
	Power cord	1 NEMA L6-30P per side	1 NEMA L15-30 per side
Output voltage specifications	Rated output voltage	-48.8 VDC to -54 VDC	-48.8 VDC to -54 VDC
	Rated output current	99A	170A
	Rated output power	4298 W	8310 W
	Nominal power	4158 W at 208 VAC	7202 W at 208 VAC
Ambient temperature range (See note)	Operating	50° to 95° F/10° to 35° C	50° to 95° F/10° to 35° C
	Shipping	-22° to 140°F/-30° to 60°C	-22° to 140°F/-30° to 60°C
Relative humidity, non-condensing (See note)	Operating	20% to 80%	20% to 80%
	Non-operating	5% to 95%	5% to 95%
Wet bulb temperature	Operating	82.4° F/28° C	82.4° F/28° C
	Non-operating	101.7° F/38.7° C	101.7° F/38.7° C

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for Power Distribution Devices

	Power Bus Box	Mini Bus Bar	Scalable Bus Bar
Power enclosures or facility DC feeds supported (3U each)	1	1	2
Server blade enclosures supported (6U each)	1	3	5
Total rack height of supported enclosures	9U	21U	36U
Dimensions			
Height	5.1 in/12.95 cm	19.45 in/49.40 cm	48.57 in/123.37 cm
Width	3.6 in/9.14 cm each	19.74 in/50.14 cm	19.74 in/50.14 cm
Depth	3.25 in/8.26 cm	2.2 in/5.59 cm	2.2 in/5.59 cm
Weight	3.62 lb/1.64 kg	13.2 lb/59.9 kg	26 lb/11.79 kg
Rated operating voltage	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC
Max total power supported	3000 W	9000 W	15,000 W
Total max input current at minimum voltage	69.44 A at -43.2VDC	208.32 A at -43.2 VDC	347.2 A at -43.2 VDC (equivalent of 175A per feed)
Total max input current at nominal voltage	62.5 A at -48VDC	187.5 A at -48 VDC	312.5 A at -48 VDC (equivalent of 175A per feed)
Max current per power feed	70A	210A	210A
Max local ambient temperature	149° F/65° C	149° F/65° C	149° F/65° C

Note: All systems support redundant A & B feeds. Scalable bus bar supports dual A and dual B feeds.

Operating and Performance Specifications for Facility DC	**Voltage**	Nominal input voltage	-48 VDC
		Operating voltage range	-48VDC ± 10% or -43.2 VDC to -52.8 VDC
		Max Input voltage slew rate	0.5V/uS
		Redundant feed voltages* (A & B)	*A and B feeds must differ by no more than 5VDC during steady state operation
		Ripple/Noise	480 mV PARD**
		Overshoot	Must remain within regulation limits on all feeds during startup or shutdown
		Voltage transients	Must not exceed -60 VDC
	Current	Max steady state input current	62.5A per server blade enclosure installed at -48VDC
		Max steady state current per feed/total	
		Power bus boxes	70 A/70A
		Mini bus bars	210 A/210A
		Scalable bus bars	210 A/350A or equivalent of 175A per feed*
	In-rush current	Must support up to 2X the maximum operating current per server blade enclosure (125 A) for up to 1.0 mS	
	Input over-current	Customer provided fusing for facility DC feeds that protects the system from catastrophic over-current within 20 uS. Fuse should sustain all in-rush and operating currents.	
	Max Input Current Slew Rate	1A/uS	
	Max Rated Power	3000W per server blade enclosure	
	Connections and Cables	Compaq provided facility DC cable connection kit: • The facility DC connection kit supports the connection of up to four -48VDC, RETURN pairs and ground. The power cable assemblies consist of 1/0AWG, color-coded, flexible cable rated at 105° C, terminated with bus mating connectors at one end and unterminated at the other end. The cable length provided enables the customer to route to a fuse panel within or adjacent to the rack.	

Note: *All systems support redundant A and B feeds. Scalable bus bars support dual A and dual B feeds.

** Periodic and random noise (PARD). Maximum allowable peak-to-peak ripple and noise (as measured at the load on any output channel). The ripple and noise is measured over a 20 Hz to 100 MHz frequency band. A resistive load (non-electronic) is used for this measurement. Each output is by-passed to return by a 10uF tantalum capacitor with an ESR less than 100 milli-Ohms in parallel with a 0.47 uF ceramic capacitor, at the point of load. The load cable is 12 feet of twisted wire capable of carrying the current. The printed wiring board assembly is installed in its enclosure for this measurement, or the measurement leads are properly shielded with Earth grounds applied to the insert.

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